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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,718	08/31/2001	Masataka Shirai	NIT-302	8857

7590 09/25/2003

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EXAMINER
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FLORES RUIZ, DELMA R

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 09/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/942,718

Applicant(s)

SHIRAI ET AL.

Examiner

Delma R. Flores Ruiz

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 - 3, 5 - 7, and 9 - 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 3, 5 - 7, and 9 - 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 3, 5 – 7, 9 – 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tohyama et al (5,642,371) in view of Okumura (6,377, 597)

***Regarding claim 1***, Tohyama discloses a module for optical communication having modulator integrated laser includes a semiconductor laser active (see Figs. 16 – 18, Character 55, Column 14, lines 57 – 67, Column 15, lines 1 – 6) and, an optical modulation region (Column 13, lines 4 – 11, Column 20, lines 23 – 34) for modulating the light from the semiconductor laser active region and a temperature control region (see Figs. 16 – 18, Character 70, Column 2, lines 27 – 37, Column 3, lines 5 – 67, Column 10, lines 6 – 17, Column 15, lines 39 – 49) for controlling temperature of at least the optical modulation region, said semiconductor laser active region having a

multiple quantum well structure (see Figs. 16 – 18, Character 55 and 53), wherein a semiconductor laser active region or temperature of a component in thermal contact with the semiconductor laser active region for holding the temperature of the semiconductor laser active region is set to 35<sup>0</sup> C or higher during operation of the semiconductor laser active region and the optical modulation region (see Fig. 28).

Tohyama discloses the claimed invention except for multiple quantum well having at least two quaternary mixed crystal layers in which a band offset of conduction band is larger than a band offset of a valence electron band, said at least two quaternary mixed crystal layers being selected from the group consisting of quaternary mixed compound of In, Ga, Al and As and a quaternary mixed compound of Un, Ga, N and As. It would have been obvious at the time of applicant's invention, to combine Okumura of teaching a multiple quantum well having at least two quaternary mixed crystal layers in which a band offset of conduction band is larger than a band offset of a valence electron band, said at least two quaternary mixed crystal layers being selected from the group consisting of quaternary mixed compound of In, Ga, Al and As and a quaternary mixed compound of Un, Ga, N and As with a module device because it would have been obvious to one having ordinary skill in the art at the time the invention was made to multiple quantum well having at least two quaternary mixed crystal layers in which a band offset of conduction band is larger than a band offset of a valence electron band, said at least two quaternary mixed crystal layers being selected from the group consisting of quaternary mixed compound of In, Ga, Al and As and a quaternary mixed

compound of Un, Ga, N and As, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

**Regarding claims 2 – 3** Tohyama discloses the temperature control component is a heating component or a heater and the control temperature control component is disposed without having a cooling component (see Figs. 16 – 18, Character 70, Column 2, lines 27 – 37, Column 3, lines 5 – 67, Column 10, lines 6 – 17, Column 15, lines 39 – 49).

**Regarding claims 5 and 11**, Tohyama discloses a module for optical communication and optical transmission module having a modulator-integrated laser includes a semiconductor laser active (see Figs. 16 – 18, Character 55, Column 14, lines 57 – 67, Column 15, lines 1 – 6), having at least two active regions, (see Figs. 16 – 18, Character 53 and 55) and an optical modulation region (Column 13, lines 4 – 11, Column 20, lines 23 – 34) for modulating the light from the semiconductor laser active region and a temperature control region (see Figs. 16 – 18, Character 70, Column 2, lines 27 – 37, Column 3, lines 5 – 67, Column 10, lines 6 – 17, Column 15, lines 39 – 49) for the temperature control at least the optical modulation region, said semiconductor laser active region having a multiple quantum well structure (see Figs. 16 – 18, Character 55 and 53), wherein a temperature of at least the semiconductor

Art Unit: 2828

laser active region or semiconductor laser active region for holding the temperature of the semiconductor laser active region set to 35 C or higher during operation of the semiconductor laser active region and the optical modulation region (See Fig. 28).

Tohyama discloses the claimed invention except for multiple quantum well having at least two quaternary mixed crystal layers in which a band offset of conduction band is larger than a band offset of a valence electron band, said at least two quaternary mixed crystal layers being selected from the group consisting of quaternary mixed compound of In, Ga, Al and As and a quaternary mixed compound of Un, Ga, N and As. It would have been obvious at the time of applicant's invention, to combine Okumura of teaching a multiple quantum well having at least two quaternary mixed crystal layers in which a band offset of conduction band is larger than a band offset of a valence electron band, said at least two quaternary mixed crystal layers being selected from the group consisting of quaternary mixed compound of In, Ga, Al and As and a quaternary mixed compound of Un, Ga, N and As with a module device because it would have been obvious to one having ordinary skill in the art at the time the invention was made to multiple quantum well having at least two quaternary mixed crystal layers in which a band offset of conduction band is larger than a band offset of a valence electron band, said at least two quaternary mixed crystal layers being selected from the group consisting of quaternary mixed compound of In, Ga, Al and As and a quaternary mixed compound of Un, Ga, N and As, since it has been held to be within the general skill of a

worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

**Regarding claims 6 – 7 and 12 – 13,** Tohyama disclose the temperature control component is a heating component or a heater and the control temperature control component is disposed without having a cooling component (see Figs. 16 – 18, Character 70, Column 2, lines 27 – 37, Column 3, lines 5 – 67, Column 10, lines 6 – 17, Column 15, lines 39 – 49).

**Regarding claims 9 and 10** Tohyama disclose the semiconductor laser chip region and the optical modulation region are constituted, respectively, with semiconductor chip regions separately from each other and are constituted as semiconductor chip region integrated in one identical substrate (see Figs 16 – 18).

### ***Response to Arguments***

Applicant's arguments filed 8/6/2003 have been fully considered but they are not persuasive. Applicant's arguments with respect to claims 1 – 3, 5 – 7, and 9 – 13 have been considered but are moot in view of the new ground(s) of rejection.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (703) 308-6238. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.



Delma R. Flores Ruiz

Examiner  
Art Unit 2828  
DRFR/PI  
September 5, 2003



Paul Ip  
Supervisor Patent Examiner  
Art Unit 2828